PROGRESS REPORTS FOR INTERTECT/CMU

PROJECT 020R

PERU ACTIVITIES

by INTERTECT/CMU

1977 - 1979

UNITED STATES GOVERNMENT

Memorandum

TO : DS/ENGR, James J. Claps

DATE: August 1, 1979

FROM : DS/H, John Miller

SUBJECT: Office of Housing Comments: CMU Ultra Low Cost Shelter Final Report

I. Activities of the CMU/Intertect Team in Peru: Final Project Report

This report seems to provide a fair analysis of the project. It must be noted, of course, that it was prepared by the Team itself. While the critical findings do not appear to be self-serving, there is probably much left unreported. The issue that strikes us as most critical - and, in fact, should be vital to a final project report - is that of the project's usefulness, replicability, and future applicability. Though the program concept is found to be a "workable approach" (Section V.A.), the case for that conclusion is simply not made. In fact, given the problems encountered and lessons learned, the program concept does not appear valid.

If you have not already, I suggest you get comments on this draft from USAID Peru, particularly Paul Vitale and E. Alarcon.

Other Observations

1) The problems encountered and lessons learned are the substance of the report, yet they do not seem to stand out so clearly.

Two suggestions: first, combine those two sections so that a lesson learned is clearly associated with a problem. Second, provide a table of contents so that these items can be more comprehensively seen.

2) INTERTECT is described on the first page as a firm with "experience in earthquake - related housing education programs", yet according to that same paragraph, the program emphasis changed from exactly that to structural modification as a disaster mitigation measure.

3) Section II: It would be useful to describe more fully the criteria used in selecting the communities.

4) Section IV: A. last line: It is not clear how the cost to the consultants went up. Or, should this line read cost <u>for</u> the consultants.

5) Section IV.B: The reasons why the community selected was a difficult one to work in are not clear. It could not be only because it did not meet the original criteria.

6) Section IV.C.1: As it is described, this first point does not seem to be one of coordination. Rather, it is an OIN management problem.

7) Section IV.D: "Community coping mechanisms" may be a fine term for an anthropologist but please say in this report what is really meant.

8) Section IV.E: The issue of what type of demonstration structure to build is not a technical one. As described here, it was a cultural issue. The ultimate compromise of a series of small classrooms looks like a serious mistake.

   The technical issue noted in the last paragraph of E is a major one with very serious consequences. This point should be emphasized, its consequences described, and its lessons clarified.

9) Section V.E: If the self-help housing concept is thought to be a myth, this is a major finding and should be given even more emphasis. Is there no evidence at all that self-help housing is viable?

10) Section V.G.3: There are several observations regarding target group responses to training techniques. How were these conclusions reached - real testing? good guessing?

11) Section VI: Were the goals outlined in the contract really met? If so, then the goals must not have been very well defined.

II. Summary of the Activities of the CMU/Intertect

   Team Carried Out Under Contract No. AID/ta-C-1435, 1976-1979.

The relation between this report and the Peru report is not clear. The cover memo refers to one eventual final report. If these both become combined, the relationship should be described. In addition, this needs a table of contents (even as a draft).

The report has a completely different tone from the first. It describes only very generally the activities, and lacks a critical narrative on problems and lessons. In fact, Section III, Comparative Lessons and Achievements, is not even included in our draft. We suggest that section cover problems and lessons, as well as achievements, and that it be circulated when drafted.

The last paragraph of Section I.A. refers to the change in program concept from the promotion of structures and designs to the modifications of traditional structures. We would note that the Office of Housing not only supported this change, but had advocated that approach from the beginning. The exercise in Bangladesh was not a necessary step to learn the lesson.

We take exception to the part of Section II.B.3, that implies the Offices of Housing and Engineering have not been responsive to information requests during post-disaster periods. In fact, the Office of Housing had been responsive, including assistance in the formulation of plans, after earthquakes in Italy, Peru, Nicaragua and others.

7 AUG 1979

MEMORANDUM

TO: DS/ENGR, Mr. James J. Claps

FROM: D/PDC/OFDA, Christian R. Holmes, Acting

SUBJECT: CMU/Intertect Activities Summary

OFDA has reviewed the materials you forwarded on July 18. Our general feeling is that the CMU/Intertect team has conducted a comprehensive effort and produced a mass of information which should be of great value to ourselves and others in the disaster preparedness and relief business.

The summaries suggest sound methodology, ambitious literature search and prolific report writing. Without seeing the actual reports, it's difficult to assess how much duplication and redundancy occurs in the profuse materials lists. Nor can we foresee how the materials, which range from very specific to universal in scope and application, lend themselves to extrapolation from the research sites to the rest of the disaster-prone world. All in all, though, we are tempted to be encouraged by the summaries and look forward to seeing the final report package.

We agree with the comments made on Future Research Needs and Directions (Item IV of the "Summary Activities"). I think that our own initiatives in regional disaster preparedness seminar activities may well provide a manageable focus for such ongoing research, information sharing and development of building standards. We are currently considering Intertect involvement in shelter/displaced persons workshops in a seminar planned for the ASEAN countries in February, 1980. We would like to talk with you about how our mutual interests can be served through this approach.

I am enclosing specific comments on the Peru activities summary made by Bill Jansen of our staff.

Enclosure:
as stated

MEMORANDUM FOR THE RECORD July 27, 1979

From: PDC/OFDA, William H. Jansen WHJ

Subject: Comments on the CMU Ultra Low Cost Shelter Final Report

A. The consultant's position that shelter changes should be limited and in the context of traditional construction practices appears to be very sound. Their argument not to introduce totally new shelter concepts also tends to be supported by a wide range of social change literature. Hopefully, the final report will present their argument more fully and include details about how and what traditional practices were maintained while improvements in construction were introduced.

B. The consultant's summary also describes a concern for relating any housing program with the indigenous construction process already in existence within an area. This concern is also laudable; consequently, we would like to see a detailed description of its incorporation into the contract activities. More specific information on the traditional role of the albañiles in construction would be helpful--particularly their position in the community organization and how the albañiles and the rest of the community viewed the role of the albañile in a housing program. The report further notes that anthropological studies, prior to the field work, were used in confirming what the existing housing construction practices were. In the final report, these should be documented and referenced. Copies of the studies would also be valuable for our operations in OFDA.

Interim Report 1

REPORT ON THE ACTIVITIES OF THE CMU/INTERTECT TEAM IN PERU, DECEMBER 1977

Interim report on the project, submitted to David Olinger, USAID Mission/Lima, December 5, 1977. Copy hand-delivered to James J. Claps, USAID/Washington on December 9, 1978.

Report on the Activities of the CMU/INTERTECT Team in Peru

December 1977

I. Project Status

In November of 1976, INTERTECT received a request from USAID/Peru to visit with the Housing and Urban Development Officer of the USAID Mission in Lima to discuss the possibility of providing technical assistance to a housing project of the Government of Peru in several of the earthquake-prone regions of the country. In March of 1977, Frederick C. Cuny of INTERTECT visited with Mr. David Olinger and met with members of the Oficina de Investigación y Normalización (OIN) of the Ministerio de Vivienda y Construcción in Peru to discuss possible linkages between the Carnegie-Mellon/INTERTECT team and the work that OIN was conducting in the field of developing earthquake resistant adobe housing construction methods.

Based upon that meeting, in May of 1977 the director of the OIN, Ing. Constantino Demitriades Boulanger, sent a letter to INTERTECT requesting that a team from the CMU/INTERTECT group be sent to Peru to begin work with the OIN in developing strategies and approaches for the provision of widespread information on housing reconstruction in the event of earthquakes; in developing training manuals and visual materials for use following disasters; and in testing these in a program of housing construction that was being undertaken by the OIN under a grant provided by USAID/Peru.

Subsequent to that letter, the USAID Mission in Peru informed the CMU/INTERTECT team that a formal letter of agreement would be required in order for the Government of Peru's National Institute of Planning to concur in the project. Thus in August of 1977, Mr. Cuny again visited Peru and met with representatives of the OIN and the Ministry of Housing to work out a letter of agreement outlining in detail the activities that would be carried out under the project and the responsibilities of each of the parties to the letter. During this series of meetings, the basic philosophy of the project, the goals and the requirements for staff participation, were outlined.

Approximately one month after the letter of agreement was submitted, the National Institute of Planning notified the OIN and USAID/Peru that they would prefer to have a formal contract between the OIN, USAID and the CMU/INTERTECT team, rather than simply a letter of agreement. While the scope of services and the timeframe for the work were considered appropriate, the National Institute of Planning requested minor administrative changes in the proposals for the project. At that time, they requested that a meeting be held of all the key parties to the project, and that the formal contract be worked out, outlining in detail the scope of services, etc. Hence in October 1977, Professor Volker Hartkopf of Carnegie-Mellon University, Mr. Cuny of INTERTECT, and Dr. Margaret Kieffer of INTERTECT returned to Peru to work out the formal contract. At the same time, they visited the project area and began gathering the information necessary for initiating the project.

The team members visited the proposed project area -- Huánuco -- to determine whether the project would be feasible in that region. The members stayed in the area for approximately one week, and visited with numerous officials from the Government of Peru and various agencies working in the Huánuco region. Huánuco was selected by the Ministry of Housing as a priority area, and the Ministry of Housing has been assigned that region by the Government of Peru as an area of prime responsibility, not only for housing but also for other programs. The Huánuco region has been designated as a zone of high seismic risk (although there is no recent history of earthquakes within that region). Huánuco is a unique region in that the season is favorable to work in almost all months of the year, and adobes can be made throughout the year. The housing in the area is very similar to the types the team has encountered in other parts of the world, especially in Guatemala and other areas in Latin America. Moreover, the area is easily accessible and numerous governmental agencies are present, thereby facilitating coordination with the Government of Peru and its agencies. There were, however, a number of drawbacks to the selection of that area, and the team decided to request that the OIN explore the possibility of selecting another site for its first project.

The next area selected by the OIN as a high priority area was the region around the town of Huancayo. During the following week, representatives of the OIN and Dr. Kieffer visited the area and spent one week examining this region as a possible site. At the conclusion of the visit, both Dr. Kieffer and the OIN representative were encouraged by the response they had received in the community, and the primary factors of concern (high seismicity; easy access; abundance of building materials; high concentration of traditional peoples; numerous indigenous organizations in the area; etc.) all seemed to indicate that the Huancayo region was preferable to Huánuco.

Another meeting was held the following week with the OIN to discuss the site selection. At this meeting, however, the OIN indicated that the Ministry was now insisting that the first project area be Huánuco. The OIN asked whether it was possible to carry out two projects -- one in Huánuco and one in Huancayo. The CMU/INTERTECT team indicated that, due to funding limitations, only one project area should be selected, and strongly urged that the Huancayo region be chosen. The OIN said that they would check again with the Ministry, but felt that two project areas were preferable and wanted to know if there was any possibility of expanding the funding that was available to enable the team to work in both areas.

The request for an expansion into both areas was discussed with Mr. Olinger of USAID/Peru. Mr. Olinger indicated that he concurred with the CMU/INTERTECT team that the best area would be the Huancayo region, and felt strongly that a project should be conducted in that area. He indicated, however, that an expanded program might be preferable, as it would give the Government of Peru a broader range of experience, and that he would not object to carrying out a project in both areas, were funds to be available.

Following the team's visit, Mr. Olinger sent a letter to the OIN suggesting that they select the Huancayo region as the first project area. This was followed up by several telephone conversations with personnel of the OIN. The final site selection will be made in mid-December by the OIN and the Ministry of

Housing. At this point, they are still requesting that two project areas be selected -- one in Huánuco and one in Huancayo.

During the last visit to Peru, the team collected extensive information about the two sites, including information concerning the local housing processes, construction details, local building materials, organizations with whom the team would be working, and made extensive contacts within the professional and technical communities in Peru. Dr. Kieffer also began a preliminary investigation of the cultural and anthropological constraints within which the team will work.

Recently, USAID/Peru and the OIN requested that the CMU/INTERTECT team prepare a list of activities that should be carried out prior to the return of the team in January or February of 1978. This list of activities has been attached as Appendix A.

The current schedule of activities as proposed in the contract is attached as Appendix B.

II. Current Activities

During the past month, Mr. Cuny and Mr. Everett Ressler of INTERTECT visited Albuquerque, New Mexico, for a series of discussions about stabilized adobe. The team members met with Mr. Ernest Sanchez, a contractor in Albuquerque who has one of the nation's largest stabilized adobe manufacturing enterprises. He has been using the same stabilizing agent as the one which the Peruvian Government wants to use in this project. He was able to provide many useful ideas about the stabilizer and outline the problems the team will encounter in its use.

Following that meeting, Mr. Cuny talked with Dr. Merle Tindel who first developed the formula. Dr. Tindel was able to provide many other suggestions for using the stabilizer.

On the following day, the team members visited the Chevron Asphalt Company plant in Albuquerque to learn more about the process of manufacturing the asphalt stabilizer. The plant director, Mr. James Sampson, not only provided detailed explanations of how the agent is produced, but also provided several technical reports on the asphalt emulsion.

Presently, activities of the team are centered on preparing for the first phase of the project which is due to commence soon after the first of the year. Numerous technical articles on housing construction, sites and services, predisaster planning, approaches and strategies to post-disaster housing programs are being abstracted in Spanish for presentation to the OIN and use in a series of training seminars during the first phase of the project.

FCC:jwp

RECOMMENDED ACTIVITIES FOR OIN

I. Specific Activities that Should be Completed Before the CMU/INTERTECT Team Returns:

A. The work area(s) must be selected. Within the target area(s), the primary village(s) in which we will work must be selected.

B. The sociologist with whom we will be working must be hired.

C. The artwork which is currently being prepared for the housing information manuals for the adobe construction process should be sent to us for our critique and comment. Once the drawings are complete, one of the OIN staff members should take them into the target area(s) or village(s) and show them around for comment, to see if the people can comprehend them and to determine how well the drawings and wording are understood. The comments should be recorded and forwarded to us.

D. Members of the staff should begin collecting the following data and information:

1. Photographic catalogue of the typical structures in the target area. They should spend several days taking photos of the interiors and exteriors of typical types of housing, especially adobe and tapial, concentrating on the most prevalent housing types and trying to identify and catalogue typical details of the structures. They should especially concentrate on the walls and how they are made; the corners and how they are made; wood details; details relating to the construction of the roof; and the ways by which the roof is attached to the walls. Relevant comments should be made about any building practices which appear to be significant. For example, many of the houses that we have seen appear to be out of plumb. This is probably because the people putting up the houses do not know how to lay out a house. This type of information can be checked and comments noted about the way in which the foundation is laid out.

2. Description of the building process. The OIN staff should visit the target village(s) and prepare a detailed report on the local building process, including:

a. Criteria used by families in selecting types of materials to use when constructing a house (e.g. durability, financial choice, insulation, etc.);

b. A description of which materials are perceived to be the best (rank these in order);

c. A description of the perceived worth of each type of component;

d. A determination as to who makes the decisions while the house is under construction -- the owner? an albañil?, etc.;

e. A determination as to how long people expect their houses to stand up;

f. A determination as to what types of problems people normally expect their houses to encounter (e.g. termites, erosion, etc.) - these should be ranked in priority of occurrence or concern;

g. A determination of the timing of construction;

h. An outline of the sequence of construction;

i. A determination of the time necessary to complete the structure;

j. A determination of the time relative to events when people build a new structure (e.g. after weddings; when family size reaches a certain level; when the existing structure begins to deteriorate, etc.);

k. A description of how construction materials are paid for -- are they financed? do the co-ops lend the money? etc.;

l. A determination of how many different houses a person will expect to live in during his lifetime.

3. A list of construction terms used in the project area should be prepared.

4. A brief report on the availability of construction materials, their costs and times of availability should be prepared.

5. A report on the target village(s) should be prepared and should include, at a minimum, the following items:

a. The relevant census information for the area (including demographic information; educational levels; in-migration and out-migration; sex statistics; birthrates; and number of marriages within the last reporting period);

b. A list of the government agencies and services in the area;

c. A list of the transportation and communication systems available in the area;

d. A description of the religious and social practices and customs in the area;

e. A list of the local fiestas and holidays in the village;

f. A description of the major problems which the villagers themselves see as confronting their village now and in the near or immediate future - these should be ranked in order of priority or importance to the villagers.

6. A brief report giving a description of family life in the village for the majority of the families should be prepared. It should include the following:

   a. A description of agricultural activities, including time schedules for major activities such as planting, harvesting, etc.;

   b. A description of the daily activities and the general time schedule;

   c. A description of the activities associated with housing, including annual times for repairing or changing roofs, adding new rooms to the house, etc.;

   d. A listing of the work activities and skills of the family members;

   e. A determination of the frequency of travel outside the area and the distance traveled away from the area;

   f. A description of the various types of communications devices to which the family has access (e.g. newspaper, radio, television, motion pictures). The number of times per month or year that members of the family will see a motion picture should be determined. If the village does not have a motion picture theater, it should be noted how far people travel in order to see a movie. It should also be noted whether or not the local church, or other social or governmental agencies, ever show films within the community.

7. A brief report on the local formal and informal educational services and practices should be prepared. It should include a listing of the types and sizes of educational institutions; a description of who uses the facilities; when they are used; how long people attend the various classes; the number of people within the community who go away to school, both outside the village, the district, the province and the department. The report should also indicate any indigenous education practices that are in use. (We are particularly interested in learning how people communicate ideas within the community. To identify this, the interviewer might ask what types of programs or presentations have left an impression on the villagers.)

II. General Activities:

A. In addition to the above requested reports, the staff at OIN should gather any key information or reports produced about the village(s) in the target area(s), and gather the information and materials that the field team will need (e.g. maps, etc.).

B. It is also imperative that, once the village is selected, the OIN staff make contact with the organizations in the area through which they wish to work (e.g. the cooperatives, the OIN area office, etc.). As soon as they have identified those groups, they should send the INTERTECT staff a description of each group; who its members are; how the group operates; when they meet; the times they would be available to work with the team; etc.

FCC/MKL:jwp

cc: Olinger
Claps
Hartkopf
Kieffer

Interim
Report 2

INFORME SOBRE LAS ACTIVIDADES DEL EQUIPO CMU/INTERTECT EN EL PERU
Junio 1978

En noviembre de 1976 INTERTECT recibió una solicitud de USAID/Perú para que se entreviste en Lima con el funcionario de Vivienda y Desarrollo Urbano de dicha Misión a fin de discutir la posibilidad de proveer asistencia técnica para un proyecto de vivienda del Gobierno del Perú en diversas zonas sísmicas del país. En marzo de 1977, el Sr. Frederick Cuny de INTERTECT se entrevistó con el Sr. David Olinger de USAID y se reunió con miembros de la Oficina de Investigación y Normalización (OIN) del Ministerio de Vivienda y Construcción del Perú para discutir posibles vínculos entre el equipo Carnegie-Mellon/INTERTECT y el trabajo que la OIN estaba realizando en el desarrollo de métodos de construcción de vivienda con adobe asísmico.

En base a esa reunión, en mayo de 1977 el Director de la OIN, Ing. Constantino Demitriades Boulanger, envió una carta a INTERTECT solicitando el envío de un equipo del grupo CMU/INTERTECT al Perú para que empezase a trabajar con la OIN en el desarrollo de estrategias y enfoques para la elaboración de amplia información relacionada con la reconstrucción de viviendas después de desastres; en el desarrollo de manuales de entrenamiento y material visual a ser utilizados luego de desastres; y en el ensayo de éstos en un programa de construcción de vivienda que estaba siendo realizado por la OIN mediante una donación de USAID/Perú.

Con posterioridad a esa carta, la Misión USAID en el Perú informó al equipo CMU/INTERTECT que se requería una carta formal de entendimiento a fin de que el proyecto obtuviera la aprobación del Instituto Nacional de Planificación del Perú. Por consiguiente, en agosto de 1977 el Sr. Cuny visitó nuevamente el Perú y se entrevistó con representantes de la OIN y del Ministerio de Vivienda para elaborar una carta de entendimiento que delineara en detalle las actividades que se realizarían dentro del proyecto y las responsabilidades de cada una de las partes firmantes de dicha carta. Durante una serie de reuniones se determinaron, la filosofía básica del proyecto, las metas de éste y los requerimientos de personal.

Aproximadamente un mes después que la carta de entendimiento fuera remitida, el Instituto Nacional de Planificación notificó a la OIN y a USAID/Perú que éste prefería la suscripción de un contrato formal entre la OIN, USAID y el equipo INTERTECT, en lugar de simplemente una carta de entendimiento. Mientras que el alcance de los servicios y el marco de tiempo del trabajo fueron considerados adecuados, el Instituto Nacional de Planificación solicitó cambios administrativos menores en las propuestas del proyecto. En aquella oportunidad el INP solicitó la reunión de todas las partes involucradas en el proyecto, y la elaboración de un contrato formal detallando el alcance de los servicios, etc. Por consiguiente en octubre de 1977, el Profesor Volker Hartkopf de la Universidad Carnegie-Mellon, el Sr. Cuny de INTERTECT, y la Dra. Margaret Kieffer de INTERTECT retornaron al Perú para elaborar un contrato formal. Al mismo tiempo visitaron el área del proyecto y comenzaron a recabar la información necesaria para darle inicio a éste.

Los miembros del equipo visitaron el área del proyecto propuesta--Huánuco--a fin de determinar si el proyecto sería factible en esa región. Los miembros permanecieron en el área una semana aproximadamente, y se entrevistaron con numerosos funcionarios del Gobierno del Perú y varias entidades que trabajan en la región de Huánuco. Dicha región fue designada área prioritaria por el Ministerio de Vivienda y Construcción y ha sido asignada al Ministerio de Vivienda como área de primera responsabilidad, no sólo para vivienda sino también para otros programas. El área de Huánuco ha sido designada de alto riesgo sísmico (aunque no hay historia reciente de terremotos en esa región). Huánuco es una región singular en el sentido de que su clima permite trabajar casi todos los meses del año, y el adobe se puede fabricar todo el año. Las viviendas en dicha área son muy similares a los tipos de vivienda que el equipo ha encontrado en otras partes del mundo, especialmente en Guatemala y otras zonas de América Latina. Además, el área es fácilmente accesible y existen numerosas entidades gubernmentales allí lo cual facilita la coordinación con el Gobierno del Perú y sus dependencias. Hubo, sin embargo, un número de desventajas en el área seleccionada y el equipo decidió solicitar a la OIN que estudiase la posibilidad de elegir otro lugar para este primer proyecto.

La siguiente área seleccionada por la OIN como área de alta prioridad fue la región de Huancayo. Representantes de la OIN y el Dr. Kieffer visitaron la zona y pasaron varios dias examinando esta región como posible lugar del proyecto. Al término de la visita, tanto el Dr. Kieffer como el representante de la OIN fueron estimulados por la acogida que habían recibido de la comunidad, y los factores principales en cuestión (alto riesgo sísmico, fácil acceso, abundancia de materiales de construcción, alta concentración de pobladores autóctonos, numerosas organizaciones indígenas en el área, etc.) parecian indicar que la región de Huancayo era preferible a la de Huánuco.

La semana siguiente se realizó otra reunión con la OIN para discutir la selección del área del proyecto. En aquella reunión, sin embargo, la OIN indicó que el Ministerio insistía que la primera área del proyecto fuese Huánuco. La OIN sugirió La realización de dos proyectos, uno en Huánuco y otro en Huancayo. El equipo INTERTECT/CMU indicó que debido a limitaciones de fondos solamente se designaría un área, y exhortó vivamente para que se seleccionase la región de Huancayo. La OIN manifestó que se consultaria nuevamente con el Ministerio, pero indicó que dos áreas de proyecto serian preferibles deseando saber si habria alguna posibilidad de ampliar los fondos disponibles a fin de permitir que el equipo trabaje en ambas áreas.

La solicitud para ampliar el proyecto a ambas áreas fue discutida con el Sr. Olinger de USAID/Perú quien indicó que no objetaba la realización del proyecto en dos áreas de haber fondos disponibles.

Durante la visita al Perú en el mes de octubre, el equipo recabó amplia información sobre las dos regiones, incluyendo información acerca de procesos de construcción local, detalles de construcción, material de construcción local, organizaciones con las cuales estaría trabajando el equipo, y realizó amplios contactos dentro de las comunidades profesionales y técnicas del Perú. La Dra. Kieffer inició asimismo una investigación preliminar de las dificultades culturales y antropológicas dentro de las cuales habrá de trabajar el equipo.

En noviembre de 1977, los Sres. Cuny y Everett Ressler de INTERTECT viajeron a Albuquerque, Nueva México (EEUU) para serie de discusiones sobre adobe estabilizado. Los miembros del equipo se entrevistaron con el Sr. Ernest Sanchez, un contratista de Albuquerque que cuenta con una de las empresas de fabricación de adobe estabilizado más grandes de los EEUU. El Sr. Sanchez ha estado empleando el mismo agente estabiliz dor que la OIN utiliza en este proyecto. El proporcionó muchas ideas útiles acerca del estabilizador y mencionó los problemas que el equipo hallaria en su empleo.

Luego de esta reunión, el Sr. Cuny conversó con el Dr. Merle Tindel quien primero elaborá dicha formula. El Dr. Tindel presentó muchas otras sugerencias para el uso del estabilizador.

Al día siguiente, los miembros del equipo visitaron la planta de la Compania Chevron Asphalt en Albuquerque para aprender más acerca del proceso de fabricación del estabilizador del adobe. El director de la planta, el Dr. James Sampson, no sólo proporcionó explicaciones detalladas acerca de cómo se produce el agente, sino que presentó varios informes técnicos sobre la emulsión del adobe.

Actividades Realizadas durante la Visita de los Consultores en el Mes de Marzo

En marzo de 1978 los consultores retornaron al Perú para empezar a trabajar en la primera fase del trabajo de campo. Los miembros del equipo INTERTECT fueron los siguientes:

Sr. Frederick Cuny
Dr. Loren A. Raymond, geólogo
Sra. Nancy Lehman de Fritch, especialista en ayudas didáticas

A mediados de marzo el Profesor Volker Hartkopf se incorporó al equipo.

A. Actividades del Dr. Raymond.

Entre el 16 y el 28 de marzo, el Dr. Raymond visitó el Perú. Sus actividades incluyeron tres aspectos separados:

1. Reconocimiento del campo y entrevistas para evaluar el riesgo sísmico,

2. Presentación de un trabajo en un seminario sobre programas de vivienda para ingenieros de la OIN, y
3. Reconocimiento de campo de las áreas de proyecto sugeridas para evaluar su conveniencia geológica.

ESTUDIOS GENERALES DE RIESGO SISMICO

Los estudios generales de riesgo sísmico abarcaron el reconocimiento del campo, estudios cartográficos y entrevistas personales. El primer estudio de campo abarcó un viaje al norte de Lima, a lo largo de la costa, y luego tierra adentro al valle del río Santa. A lo largo de la costa, él pudo observar la construcción de vivienda con quincha básicamente asísmica que resulta relativamente segura en casos de sismos costeños.

El valle del río Santa fue un lugar de considerables pérdidas de vidas y viviendas durante el sismo de mayo de 1970. Las viviendas de adobe y tapial pobremente construídas son típicas de esta región. Geológicamente el valle del río Santa está aparentemente regulado por fallas. Dichas fallas a lo largo de la franja occidental del valle, algunas de las cuales figuran en los mapas y otras no, pueden ser una fuente futura de sismos locales. Los grandes terremotos de la costa también afectan esta área y producen grandes derrumbes y corrientes de lodo. Se sabe que la destrucción total y entierro de Yungay en el sismo de 1970 se produjo como resultado de esta avalancha de lodo. Sin embargo, la magnitud del problema de derrumbes en potencia es probablemente subestimado. El reconocimiento realizado sugiere una larga historia de derrumbes a lo largo del río Santa.

El mapa geológico del Perú (Boletin No. 28 del Instituto de Geología y Minería) fue valioso para localizar muchas fallas y comprender la geología de la región. Sin embargo el número de fallas reveladas en este mapa es probablemente menor en relación con el número real de fallas presentes y que no han sido consignadas en el mapa. Por consiguiente, este mapa sólo debe ser utilizado como guía.

Mapas de riesgo sísmico están siendo preparados por el Dr. Huaco y el Ing. Deza del Instituto Geofísico del Perú. Estos mapas indican varias áreas de sismicidad histórica y contemporánea y constituyen por lo tanto una herramienta valiosa para estudios de selección de áreas. Copias de algunos de los mapas fueron proporcionadas al personal de INTERTECT y mapas adicionales pueden ser obtenidos a solicitud.

SEMINARIO PARA INGENIEROS DE LA OIN

Como parte de un seminario de tres días para ingenieros de la OIN preparado por INTERTECT, el Dr. Raymond presentó una disertación de dos horas de duración sobre la ubicación geológica de estructuras pre y post desastre. La presentación realizada el pasado 22 de marzo fue seguida por preguntas y respuestas.

El texto de la charla fue presentado (en español) al personal de la OIN mediante una serie de tres trabajos. Estos fueron distribuídos asimismo al Ing. Casaverde, Dr. Huaco, Ing. Deza e Ing. Castillo del Instituto Geofísico.

RECONOCIMIENTO DE CAMPO DE AREAS POTENCIALES

Tres áreas (Huancayo, Junín y Huánuco) elegidas por su potencial sísmico y social como áreas do proyecto fueron examinadas brevemente en el campo.

En el área de Huancayo, varias fallas cuaternarias y potencialmente peligrosas fueron descubiertas entre San Blas y Ahuac. Estas fallas que no están indicadas en el Mapa Geológico del cuadrángulo de Huancayo (Boletin No. 18 del Instituto de Geología y Minería) cortan gravas de terraplén de ríos jóvenes. La topografía producida es distintiva y la topografía similar de toda el área sugiere que el valle en el que se encuentra Huancayo está regulado por fallas, esto es, fue producido por fallas. Además, la poca antiguedad de las fallas sugiere un riesgo sísmico considerable.

El área de Junín fue observada sólo brevemente. Sin embargo parece que esa área carece de evidencia de reciente formación de fallas.

La ausencia de evidencia de fallas y la baja sismicidad del área indican que el área de Junín no debe ser seleccionada como área del proyecto.

Un lugar para la primera fase del proyecto ya ha sido seleccionado en Acomayo en la zona de Huánuco. El lugar es a lo más, mediocre ya que yace en un antiguo derrumbe algo cercano a una ladera escarpada. El lugar de la escuela en Acomayo tiene riesgo moderado.

El reconocimiento del área de Huánuco revela evidencia limitada de reciente formación de fallas. Su sismicidad contemporánea en combinación con dicha evidencia hace que el área de Huánuco sea una de riesgo moderado. No debe ser considerada una área de alta prioridad para un programa de mejoramiento de vivienda antisísmico.

RECOMENDACIONES

De los lugares examinados, el área de Huancayo tiene el mayor potencial como lugar para un proyecto de vivienda asísmica. Sin embargo, los mapas de riesgo sísmico sugieren que podrían haber otros lugares adecuados cerca de Tumbes, Huaraz, Arecuipa e Ica.

B. Actividades de la Sra. Fritch.

Entre marzo 8 y abril 8 de 1978 la Sra. Fritch trabajó con el equipo INTERTECT para:

1. Determinar la capacidad de la gente en las áreas del proyecto en potencia para entender dibujos y otras ayudas visuales.
2. Evaluar los posibles problemas que pudieran encontrarse con los folletos de COBE.
3. Presentar un seminario sobre los problemas que se encuentran normalmente cuando se utilizan ayudas didácticas en áreas rurales.

Los informes presentados por la Srs. Fritch fueron los siguientes:

1. Evaluación de la cartilla "El Adobe Estabilizado..." Abril 1978.
2. Resultados de la Encuesta en Acomayo... 5 de Abril de 1978.

3. El texto de su disertación, problemas en el uso de ayudas didácticas en áreas rurales (con diapositivos).

Copias del material antes mencionado fueron presentadas asimismo al Comité de Defensa Civil del Perú.

C. Actividades del Sr. Cuny y del Profesor Hartkopf.

Las actividades del Sr. Cuny estuvieron dirigidas principalmente a:

1. Desarrollar un rol de actividades para los consultores.
2. Coordinar actividades con AID y la OIN.
3. Iniciar la investigación de potenciales lugares para un segundo proyecto.
4. Presentar seminarios sobre:
   A. Estrategias y enfoques para programas de mejoramiento de vivienda (copia del texto presentada a la OIN y DC).

Las actividades del Prof. Hartkopf incluyeron:

1. Trabajo preliminar en el desarrollo de un indice fotográfico de estilos, técnicas y componentes de la construcción en las regiones de Huánuco, Huancayo, Huaraz, Cuzco.
2. Asistencia en el trabajo de diseño preliminar del proyecto de escuela en Acomayo.

D. Otras Actividades.

1. Además de las actividades arriba mencionadas, se efectuó un número de entrevistas y contactos personales para identificar fuentes potenciales de técnica experimentada e información.
2. Varios informes y materiales relacionados con vivienda y sanidad fueron presentados al la OIN.

Actividades de los Consultores en su visita de Mayo-Junio

El 3 de mayo de 1978 los consultores retornaron al Perú para continuar su participación en la Fase I del proyecto. Dicho equipo estuvo conformado por:

Sr. Cuny
Dra. Margaret Kieffer de Lopez, antropóloga

Durante el mes de mayo los consultores realizaron las siguientes actividades:

1. Presentación a cargo de la Dra. Kieffer de un seminario sobre "Cómo Identificar y Utilizar Mecanismos en Comunidades Rurales."
2. Desarrollo de planes para las actividades de la segunda fase del primer proyecto.
3. Continuación de actividades para seleccionar el área del segundo proyecto.

Durante el mes de mayo el Sr. James Claps de USAID/Washington visitó el Perú para discutir con OIN acerca de un posible incremento de fondos para el equipo CMU/INTERTECT. De ser aprobado, este incremento de fondos permitiría a los consultores participar más en los costos del proyecto y permitiría trabajar en un segundo proyecto. Sin embargo este aumento no ha sido aún aprobado.

El 17 de mayo el Sr. Cuny, la Dra. Kieffer y el Sr. Claps visitaron la región de Ica para determinar la posibilidad de considerar esta área como área del proyecto. Ica ha sido designada por el Instituto Geofísico del Perú como área de alto riesgo sísmico y USAID ha recomendado decididamente su consideración dado el rápido crecimiento de la región. Los consultores observaron sólo una moderada construcción con adobe en los Pueblos Jóvenes de Ica pero sustancial construcción de adobe en los poblados aledaños. En particular, el pueblo de Subtajalla ubicado a 5 Km. al norte de la ciudad de Ica es considerado buena elección para un proyecto en la costa ya que se observaron más de 100 construcciones de adobe. Además parece haber allí una fuerte tradición de trabajo comunal.

En junio, el Sr. Cuny tomó parte en las actividades de la Fase I en Acomayo. El 12 de junio presentó un resumen de sus comentarios y recomendaciones en una reunión del personal del programa. Una copia escrita de sus recomendaciones será remitida a la OIN en breve.

Informe Original en Inglés: Autor: Frederick Cuny.
Traducción: S. Elena Espejo.

Interim Report 3

INTERIM REPORT #3:

ACTIVITIES OF THE CMU/INTERTECT
TECHNICAL ASSISTANCE TEAM IN PERU

I. Activities to Date

This portion of the report identifies the activities of the Carnegie-Mellon University/INTERTECT field staff according to the tasks which are outlined in the project proposal and the contract signed in December 1977, between Carnegie-Mellon University, INTERTECT, the Office of Research and Standards (OIN), and the Foreign Ministry of the Government of Peru. The activities are divided into two parts: the direct project-related activities, and the general activities of the team.

A. Project-Related Activities:

1. Identification of High Risk Areas. A housing improvement program designed to promote improvements in housing construction in seismically active areas must concentrate on improving the housing stock in those areas which are most likely to be struck by strong tremors. In order to identify those areas, Dr. Loren Raymond of INTERTECT worked with the Institute of Geophysics, the Institute of Geology, and the Military Geographic Institute to determine those areas with the greatest seismic risk. Various members of the team have systematically visited each of these areas to determine whether it would be suitable for conducting housing improvement programs of this type. Of the areas listed, approximately 3/4 have been visited by the team. (See Project Report # 3).

2. Identification of Vulnerable Communities. Within each of the high risk areas, the team has attempted to identify those communities which are particularly susceptible to high damage levels in earthquakes. The criteria for selecting the areas have been determined by many factors, including:

a. structural analysis of existing housing types; and

b. micro-analysis of specific areas within each of the high risk regions to determine possible ground actions in the event of an earthquake.

3. Determination of Housing Demand. In order for a housing improvement program to be successful, there must be a demand for new or replacement housing. Demands can be created by any one of the following:

a. new urbanization;

b. internal growth within a stable or expanding agricultural community;

c. the creation of new settlements;

d. disasters which deplete the existing housing stock.

In each community that has been identified as being vulnerable, analysis was undertaken to determine the housing demand in that area. In those areas where both demand and vulnerability were high, the community was designated as a high priority community for a housing improvement program. (One of these high priority communities will be chosen as the site for the second project of this program.)

4. Socio-economic Analysis. Within each of the priority communities, a socio-economic analysis is made in order to determine the ability of the community to participate in the proposed housing activities and to determine at what level various technologies must be introduced. To date, the CMU/INTERTECT team has provided only general guidelines for conducting a socio-economic analysis of the communities. In the second project, Dr. Margaret Kieffer, the staff anthropologist, will complete the training on methods for conducting such an analysis and will assist the OIN staff in carrying out the task.

5. Comprehension Analysis. Any type of educational program must utilize various teaching aids and instructional methods to help transfer the information. In each community, the level of comprehension may be different; therefore, various alternatives must be explored. In order to determine which media methods work best, a comprehension analysis is normally undertaken. In March 1978, Nancy Lehman Fritch (a training aids specialist from INTERTECT) evaluated the training program of OIN, showed the staff how to conduct a comprehension analysis within a community, and demonstrated how to select and prepare various training aids for use in a specific community (see Project Report #6). In the second project, INTERTECT field staff will assist the staff of OIN in conducting their own comprehension analysis in a high priority community.

6. Study of the Normal Building Process. A successful and effective housing improvement program must capitalize upon as many as possible of the existing traditions, skills and customs which make up the normal housing process of a community. In order to understand all the factors which are present, a thorough analysis of the way that houses are built, the skills that are required, and the traditions of the building culture must be undertaken. To date, the CMU staff has conducted an extensive investigation into the traditional methods and construction techniques used in building adobe and other forms of rural housing. Dr. Margaret Kieffer of INTERTECT has completed several anthropological studies concerning the social and cultural aspects of housing construction in the Sierra regions of Peru. (See Project Journal).

7. Participation in the First Project (School Construction at Acomayo). The first activities of the project have been limited to the construction of classrooms for the school in Acomayo, Huanuco. The purpose of the first project has generally been to acquaint both OIN and CMU/INTERTECT staff

with the problems of working in rural Sierra regions of Peru, and to acquaint the INTERTECT field staff with specific construction methods which OIN has developed. The project has also served as a learning model for the OIN staff, showing them where more emphasis is needed in developing the education component of the program.

8. Evaluation of the First Project. Both INTERTECT and CMU staff have assisted in evaluating the project at Acomayo at various stages. To date, the evaluation has concentrated on the construction methodology and educational components.

9. Evaluation of Training Aids. Prior to the participation of the CMU/INTERTECT team, OIN had developed several training aids to be used in conjunction with the program. These training aids were field-tested with the assistance of INTERTECT, and a written evaluation of the training aids was prepared and submitted to OIN. (See Project Report #7).

10. Development of Draft Outlines for Audio-visual Aids. The contract between U.S.A.I.D. and OIN calls for the development of a film and other audio-visual aids which can be used to promote the improved adobe construction techniques and/or can be used as training aids with other components of the housing education program. At the present time, INTERTECT staff members have prepared several outlines which could be used to develop the films and have been working to obtain copies of similar education aids and films used in other parts of the world which might serve as guides for OIN. In addition, the possibility exists that a videotape program can also be developed, and INTERTECT has been developing an outline for a videotape series for use in the housing improvement program.

11. Review of Existing Stabilized Earth Research in Other Countries. The use of stabilized adobe is a topic which has received much interest in recent years in many parts of the world. Most notably, research has been conducted in the U.S., Mexico, Turkey, Iran and India. In 1977, the INTERTECT staff visited

several people in the U.S. who have had extensive experience with stabilized adobe, and held a series of discussions about stabilizing agents, use, problems and alternatives. In addition, team members visited the Chevron Asphalt Company in Albuquerque, N. Mexico, to learn more about the process of manufacturing the asphalt. Following the announcement of the increase in prices of oil-based products in May 1978, the INTERTECT staff has been conducting an extensive search for alternatives to the use of asphalt as a stabilizer, in order to make recommendations to OIN.

B. General Activities:

1. Training Seminars. Members of the INTERTECT staff have conducted a series of training seminars for OIN and other interested agencies. Each seminar preceded the initiation of one of the main activities of the housing improvement program, and each was accompanied by written material for use by the participants. Seminar topics have included:

   a. Strategies and approaches commonly used in providing emergency shelter and disaster housing;
   b. A scenario for conducting a housing improvement program;
   c. Housing education programs in other countries (Guatemala, India, Turkey);
   d. Geological considerations in earthquakes;
   e. Determining safe sites for housing;
   f. The role of the geologist in housing programs;
   g. Anthropological considerations for housing improvement programs;
   h. How to select training aids;
   i. How to prepare and use training aids;
   j. How to evaluate training aids.

2. Establishment of Linkages to Appropriate Technology Groups and Other Housing Sources. Extensive efforts have been made to link OIN with existing appropriate technology groups and with housing research organizations in other parts of the world, especially those with experience in adobe and other earthen wall construction.

3. Library Acquisitions. The CMU/INTERTECT team has provided over 60 reports and technical papers to OIN for their technical library, and has established contacts on behalf of OIN with various information clearinghouses.

4. Visit to Guatemala. In August 1978, INTERTECT arranged for the head of the COBE project, Sr. Tulio Galvez, to visit several housing education programs in Guatemala. The purpose of this trip (accomplished through non-project funds) was to acquaint OIN with various housing education techniques which have been employed successfully in other areas; to demonstrate the feasibility of conducting such a program in remote rural areas; and to further give OIN the opportunity to discuss with experienced field staff the problems which may arise in this type of program.

5. Coordination with Voluntary Agencies. At the present time, OIN has little contact with the voluntary agencies currently operating in Peru. INTERTECT has been working to establish contact between the voluntary agencies and OIN, and in the future it is proposed that a series of coordination meetings be held wherein areas of mutual interest can be identified.

6. Coordination with Civil Defense. In the event of an earthquake, Civil Defense will be responsible for coordinating many of the activities related to housing reconstruction in the affected zones. INTERTECT has encouraged greater participation and coordination with Civil Defense through this project and has scheduled a series of training seminars for Civil Defense personnel in relation to the housing program. Plans are currently being made for a series of joint meetings between OIN, Civil Defense and various voluntary agencies to work out common policies and strategies for responding to a major earthquake in the Sierra regions.

II. Work in Progress

The following activities are currently underway and must be completed in order to proceed with the project:

A. Identification of the Second Project Area:
As mentioned earlier, a number of priority areas have been identified; however, the final selection has not been made, pending completion of an examination of the possibilities in two remaining areas. Even if the second project is not undertaken, the identification of the priority communities should be continued and completed so that the Ministry of Housing will have the information.

B. Development of the Complete Training Program:
To date, the activities at Acomayo have not constituted a complete or balanced training program. The complete outline for the training activities, as well as for the development of the training aids, has not been completed. Once the program has been developed, it must be field-tested. This will be carried out in the second phase of the first project.

C. Development of Plans for Dissemination of Program Data:
At the present time, a number of ideas have been explored concerning ways of disseminating the information derived from the program. One of these methods -- regional seminars for professionals -- is already being carried out by the OIN staff. Further strategies need to be developed.

D. Development of Plans for the Second Phase of the First Project:
As the project currently stands, the second phase of the first project will be initiated as soon as the work at Acomayo is complete. Plans are currently being developed jointly to carry out the second stage.

III. Pending Activities

The following items must be completed in order for the project to be successfully concluded:

A. Development of Strategies for Utilization:
The contract between OIN, CMU/INTERTECT and the Ministry of Foreign Relations calls for the development of strategies and methodologies for putting the information into effect. A detailed Use Plan must be developed. At the present time, no activities along these lines have been carried out.

B. Evaluation of the First Project:
A complete evaluation of the activities of the first project is to be carried out upon completion of phase two of the first project. This evaluation will include:

1. Evaluation of the adobe process;
2. Evaluation of the teaching methods;
3. Evaluation of the training aids;
4. Evaluation of the appropriateness of the various structural improvements.

C. Specification of Future Directions:
In the course of carrying out this project, a number of items which need to be addressed in future research programs have come to the attention of the field team. These items include:

1. Methods of improving tapial structures;
2. Alternative roofing materials.

At the close of this program, it is proposed that the field team jointly prepare recommendations for OIN and the Housing Ministry concerning possible future directions for research and activities which will improve the quality of housing in the high risk areas.

IV. Accomplishments to Date

Accomplishments in this type of program are always difficult to ascertain, especially at the midpoint of a project. However, the team feels that the following accomplishments and contributions have been made:

A. Increased Awareness on the Part of OIN of Other Programs:
Through the efforts of the CMU/INTERTECT team, OIN has become increasingly familiar with the housing activities of a wide variety of other organizations, including not only those engaged in adobe research, but also those who are active in housing education.

B. Awareness of Options for Housing Improvements:
Through the efforts of the CMU/INTERTECT staff, OIN has become aware of various methods and strategies for carrying out housing improvement activities. Through an expanded awareness of the various options and how they have worked in the past, the staff will be able to determine with greater accuracy the type of problems which they will encounter in conducting housing improvement programs in the future.

C. Increased Coordination with Agencies in Peru:
While OIN has maintained good working relationships with a number of agencies and with the university system in Peru, its coordination with private voluntary agencies has been virtually non-existent. Through the efforts of the CMU/INTERTECT team, increased coordination with the voluntary agencies, as well as with certain governmental agencies, has taken place.

D. Increased Pragmatism on the Part of Project Personnel:
In the early stages of this program, project personnel were overly optimistic about the results of various activities in the field. By means of a combination of both experience and the consultants' activities, the project staff of OIN has become more realistic in assessing problems and obstacles in the tranfer of information in remote areas, and more pragmatic in assessing project potentials. An example of this is the reduced emphasis on high technology personnel and the increased reliance on masons for all aspects of the field work.

E. Improved Awareness of Field Constraints:

Again, through a combination of both field experience and consultant activities, the OIN staff has developed greater appreciation for the constraints placed on a project of this type at the field level, and correspondingly has developed an improved ability to respond to these constraints in such a way as to minimize them as obstacles to the conduct of the project.

F. Decentralization of Activities and Emphasis on the Field Level in the Project:

In the early stages of the project, the vast majority of the activities carried out by the OIN staff in relation to the project were conducted in the capital. Due to the consultants' prodding, there has been a general decentralization of both activities and authority to the field level, and further increases in decentralization are expected to continue.

G. Increased Emphasis on the Social Aspects of the Program:

At the beginning of the project, the primary emphasis of the activities was on the engineering aspects and the actual construction details. In the course of the consultants' involvement, greater awareness of the socio-economic aspects of the program has taken place, and much more emphasis has been placed on understanding the normal building process, as well as the social and cultural constraints on such a program.

H. Increased Confidence of the OIN Field Team:

When the project began, members of the OIN field staff seemed hesitant to work in the field and often appeared unsure of their moves. As consultants, the CMU/INTERTECT team has worked to increase the confidence of the field staff in all aspects of the program, but especially in relation to the housing education field activities. This support, as well as the recent trip to Guatemala to demonstrate the workability of such a program, has resulted in a measured improvement in the level of confidence of the entire team.

V. Arguments in Support of an Additional Second Project

Two projects are currently planned. The first project -- a school in Acomayo -- was selected and set up by OIN without participation by CMU/INTERTECT. The decision to work in Acomayo was essentially political and all parties now agree that the site was a poor choice. However, commitments were made that OIN felt had to be met, and all agreed that it was best to complete the work on the school with as little effort as possible, then complete a small demonstration house (also in Acomayo) as a second, finishing phase of the first project.

In order to have the opportunity to go through the entire process of developing a proper project, it was felt by all that a second project was necessary. In support of the CMU/INTERTECT recommendation, the U.S.A.I.D. Mission put its full weight behind the idea and arranged for the Mission's share of the project funds (to OIN) to be exchanged at a higher exchange rate, which gave OIN the flexibility to participate in the second project.

It has been assumed from October 1977 onward that a second project would be carried out. The only question was how large the second project would be.

Additional funds are requested primarily to enable the project to meet its goals. To accomplish all the goals, the second project is mandatory. Even to meet a limited number of goals by only completing the work in Acomayo, additional funds must be obtained.

VI. Projected Results with Additional Funds

If additional funds are obtained, it will be possible to do the following:

A. Complete, ebaluate and report on the first project, phases I and II.

B. Complete, evaluate and report on the second project. Only by completing a second project will it be possible to conduct a thorough training program for OIN staff, as a comparison between the various activities of the first and second project is necessary in order to gain a complete understanding of the

processes involved and also to reinforce the confidence of the field team in their ability to adapt and improve performance with experience.

C. Complete and produce the following products:

1. A revised and tested training aids package;
2. A package of course outlines for instructors;
3. A film series for use both as training aids and as promotional materials;
4. A balanced videotape program which can be used for training village masons and carpenters in improved construction techniques;
5. Recommendations for a balanced long-term program and for strategies for self-financing, dissemination of information and implementation of other housing improvement programs throughout the country in both pre- and post-disaster situations;
6. A complete final report. If the project is carried to its full conclusion, a full final report will be possible wherein the methodology for conducting such a program can be presented and a full description of the various activities, stages of work and problems which are encountered can be provided. At the present time, the team anticipates producing the final report in book form as a fully tested "How to do it" manual for such a project;
7. Complete evaluation of the project. Until all the various activities which have been identified as being necessary to conduct a housing improvement program have been carried out, a complete evaluation is not possible.

If the additional funds requested are approved, all members of the INTERTECT team who have participated to this point will be able to continue to work on the project in Peru.

VII. Projected Results without Additional Funds

Should the additional funds which have been requested be disapproved, and should the team have to continue with no increased level of financial support, only the following activities can be completed:

A. Phase I of the first project;
B. Development of a preliminary training aids package (not field-tested);
C. Completion of an outline for the film series;
D. Completion of an outline for a videotape program series;
E. Development of a proposal for long-term implementation strategies;
F. A detailed report on the activities to date (without an evaluation).

If no additional funds are received, the only member of the INTERTECT team who will be able to continue to participate at the field level will be Mr. Frederick Cuny.

VIII. Additional Funding Required in Order to Complete All Field Activities

At the present time, the amount of funding needed to complete, in the best possible manner, all activities of the first and second phases of the first project, and to complete the second project (from August 1, 1978, to completion of the project) is estimated to cost a total of $56,000. Current funding, which has been guaranteed for Fiscal Year 1979, is approximately $30,000. Therefore, an additional $26,000 is required in order to complete all activities as proposed.

A schedule of activities for completion of the project with the additional funding, and a schedule of activities for the completion of the project without additional funding, are attached to this report.

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Interim
Report 4

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INTERIM REPORT #4:

ACTIVITIES OF THE CMU/INTERTECT

TECHNICAL ASSISTANCE TEAM IN PERU

SEPTEMBER 15 - NOVEMBER 15, 1978

I. Activities Since Last Report

On September 20, 1978, Mr. Cuny of INTERTECT returned to Peru to continue field work on the project. Mr. Cuny was under instructions to develop a revised schedule for completing the project, as well as to develop a list of the products of the project and a schedule for their completion. The goals of the field work were to continue work in Acomayo on the model school complex and to initiate construction of a model house which could be used in conjunction with a videotape and/or film series.

On September 24th, a meeting of all the OIN staff involved in this project was held to discuss the final products of the project and to outline a work plan. At this time, Mr. Cuny was informed that many of the people involved in the project would be leaving the Ministry due to government cutbacks in personnel. As a result of these cutbacks, several key project staff members would be leaving the project, and the future staffing as well as direction of the program beyond this project were unclear. At that time, therefore, it was decided that there would be no second project, and that all of the remaining funds would be utilized to develop a complete training package that could be utilized throughout the country in seismic regions by both the government and private voluntary agencies from the United States. It was agreed that the major effort of this trip to Peru would be to concentrate on the development of training aids which could be used to promote advanced adobe construction techniques in seismic risk areas.

OIN made a commitment to retain CENCIRA, a videotape production unit of the Agricultural Ministry, to produce a training series on videotapes to promote improved housing techniques. OIN set aside funds sufficient to build one model house in the Acomayo region that could be used for filming the construction sequence with the videotape unit. OIN also assigned a new engineer, Mr. Anabel Diaz, to be in charge of the project for the remainder of the contract period. Mr. Diaz is a civil engineer who has had extensive experience in adobe construction and, as a more senior engineer, has much more authority in the execution of the program.

Following this meeting, Mr. Cuny met with Eddie Alarcón of the U.S. Agency for International Development, who is the technical advisor of the Mission on this project. Mr. Cuny explained in detail the plans for the project, the new schedule which had been established, and the proposed activities for this trip. Mr. Alarcón agreed in principle to the new schedule as well as to the revised activities. Mr. Alarcón also stated that no reports would be necessary during this trip, with the exception of the interim report which would be completed at the close of the trip and submitted within several weeks after Mr. Cuny's return to the United States.

Subsequently, Mr. Cuny met with Mr. Alarcón and Mr. Paul Vitale (Housing & Urban Affairs Office, USAID) after Mr. Vitale's arrival in Lima. At this time, a list of the proposed training aids was presented, together with a time table for the production of the training aids.

It was agreed by all parties that the following reports will be prepared as a result of this project:

A. Improvement of Adobe Houses in Peru: A Guide for Agencies (INTERTECT)

B. Analysis of the Potential for Housing Improvement in High Risk, Vulnerable Areas in Peru (INTERTECT)

C. Vulnerability of Traditional Housing in Peru: A Guide for Post-Disaster Housing Programs (INTERTECT)

D. Indigenous Construction in Peru (CMU)

E. Final Report on the Project (INTERTECT, CMU, OIN)

During the remainder of this period, Mr. Cuny concentrated on assisting OIN to develop the training aids. As a result of these activities, the following training aids were prepared in outline form:

A. Como Hacer Una Casa Segura: Problemas y Solucciones (How to Build a Safe House: Problems and Solutions) - versions for students and for instructors

B. Como Construir Con Adobe Moderno (How to Build with Modern Adobe) - versions for students and for instructors

C. Meyormiento de Tecnicas para Construcción (Improving Building Techniques) - for instructors

D. Que Son Los Terremotos (What are Earthquakes?) - for instructors

E. Manual para Instructores (Instructors' Manual) - for instructors

Materials "A", "B" and "C" listed above will be completed from preliminary drawings prepared in Acomayo during the period, which are currently in the hands of the artist at OIN. The schedule calls for the artist to complete all the preliminary drawings by January 15, 1979. Upon completion, the drawings will be forwarded to the INTERTECT office for review, and a copy will also be sent to Mr. Eddie Alarcón for a technical review by his office. Materials "D" and "E" will be prepared by INTERTECT in Dallas and will be returned to OIN, as well as to Mr. Alarcón, for technical review.

When all the drawings have been completed and reviewed, a preliminary set of booklets will be printed for use in February/March 1979 in a series of final field trials for comprehension and clarity. After final review and revision, these materials will be printed in large quantities for distribution to various programs, as well as for storage by Civil Defense for use following an earthquake in the Sierra regions of Peru.

II. Problems Encountered During this Period

The main problem encountered is the state of flux of the project personnel. As stated earlier, the key personnel involved in the project to date have all resigned due to a plan by the government to reduce government costs and staff by 25% in the next five-year period. Mr. Cuny met with Ing. Raquel Machicao, the Assistant Director of OIN, to determine what priority the project would receive as a result of these administrative changes and to try to determine what the future of the project might be in the next six-month period. Mr. Cuny was assured by Sra. Machicao that the Office of Research and Standards (OIN) still regards this as one of their high priority projects and will continue this phase of the project to its conclusion. OIN also wishes to continue to work in this field after the contract period has expired, funds permitting. She indicated that, as soon as this project is completed, OIN may seek new sources of funding to continue many of the activities which were initiated under this project and to orient the new staff members that will be replacing those who left OIN as a result of the layoffs and resignations.

III. Major Changes from Original Plans

There have been no major changes in the contract activities established in the contract which is currently in effect between USAID, OIN, INTERTECT and CMU. There have, however, been changes in the schedule for completion of the project. All the major construction activities have been initiated and will be completed by the end of the calendar year. Once construction activities have been completed and the first draft of the educational materials has been completed, a representative of INTERTECT will return (probably in mid-January or the beginning of February) to conduct an evaluation of the structure and of the educational materials. This will constitute the last field trip of the project. Upon return from this field trip, the final version of all materials will be completed and submitted to OIN and USAID.

IV. Additional Technical Assistance Required

In order to complete all the training aids within the scheduled time, it is necessary that INTERTECT assign a full-time artist to work on the educational materials for a period of approximately one month.

FCC:jwp

Peru
Report